

CASE REPORT

Spontaneous resolution of a pancreatic pseudoaneurysm

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Introduction

Pseudoaneurysms arising from the peripancreatic vasculature are a well-recognized complication of pancreatitis. They are usually treated by embolization, either endoluminally or percutaneously, to prevent the risk of catastrophic haemorrhage. To our knowledge, spontaneous resolution of a pancreatic pseudoaneurysm has not been reported previously. We present a 42-year-old man with spontaneous resolution of a pancreatic pseudoaneurysm.

Case report

A 42-year-old man with a known history of alcohol-related chronic pancreatitis, complicated by pseudocyst formation presented with recurrent severe upper abdominal pain. Clinical examination revealed an ill-defined mass in the epigastrium. Routine blood tests demonstrated mild iron deficiency anaemia (haemoglobin 9.6 mg/dl), with modest elevation of alanine transaminase (30 IU/l), alkaline phosphatase (321 IU/l) and amylase (680 U/l).

An ultrasound examination showed an ill-defined hypoechoic area, in relation to the neck of the pancreas in keeping with a pseudocyst.

An endoscopic retrograde cholangiopancreatogram (ERCP) showed multiple focal dilations of the pancreatic duct with filling defects, in keeping with chronic pancreatitis. No communication with the pancreatic duct was demonstrated. On direct inspection via endoscopy, blood was seen to be emerging from the ampulla. The possibility of a pseudoaneurysm was considered and further imaging was arranged.

A triple-phase computed tomography (CT) examination was performed (CT protocol: 5 mm slice thickness; 100 ml intravenous contrast medium at 3 ml/s with a delay of 35 s (arterial phase) and 65 s (portal phase)). The pre-contrast enhanced CT (Fig. 1) examination showed an increase in the density of the pseudocyst compared with the previous examination. Extensive pancreatic calcification was seen. The post-contrast enhanced

examination showed a curvilinear area of intense enhancement, in keeping with a peripancreatic pseudoaneurysm (Fig. 2).

A conventional coeliac axis/mesenteric angiogram was performed with a view to identifying and embolizing the involved vessel. This, however, did not demonstrate any evidence of a peripancreatic pseudoaneurysm (Fig. 3).

Subsequently, another CT examination was performed. The pre-contrast examination showed a much smaller area of hypodensity at the site of the original lesion. There was no evidence of abnormal contrast enhancement in its vicinity (Fig. 4). The peripancreatic pseudoaneurysm had resolved spontaneously, presumably due to spontaneous decompression of the aneurysm sac contents via the pancreatic duct, followed by thrombosis within the remnant of the sac.

Discussion

Pancreatic pseudoaneurysm is caused by aneurysmal dilatation of one of the peripancreatic vessels. Pancreatitis with secondary pseudocyst formation is the most common cause. The pseudocysts contain activated proteolytic enzymes, which autodigest and weaken the arterial wall and lead to pseudoaneurysm formation. The splenic artery is the most commonly affected artery, followed by the gastroduodenal, and the inferior and superior pancreaticoduodenal arteries.^{1,2} With progressive enlargement, it may rupture into the gastrointestinal tract, biliopancreatic ducts, pseudocyst, peritoneal cavity, or retroperitoneum.¹

On B-mode ultrasound, pancreatic pseudoaneurysms are seen as anechoic or hypoechoic, heterogeneous areas with distal acoustic enhancement.³⁻⁵ On colour Doppler study, blood flow into the lesion is usually easily detectable and is seen as a jet with a non-laminar, whorled flow pattern.⁴

Typical CT findings include well-defined mass with a hyperdense centre, and less dense periphery corresponding to mural clot and fibrous wall. These lesions show contrast enhancement with pooling of contrast media in the previously noted cystic

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Figure 1 Non-contrast CT image showing the peripancreatic area of hypodensity and pancreatic calcification.

area.^{2,6} These typical findings were seen in the present patient.

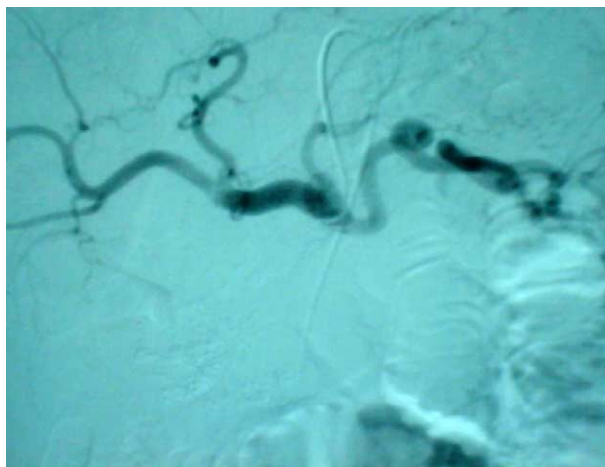
Management options for pancreatic pseudoaneurysms include open surgery or less invasive methods such as arterial embolization or image-guided percutaneous injection of bovine thrombin into the aneurysm.

The operative mortality for peripancreatic artery aneurysm has been reported to be 30-50% depending on its location.^{7,8} Postoperative complications include ileus, subdiaphragmatic abscesses, bleeding, pancreatitis and prolonged hospitalization.⁷

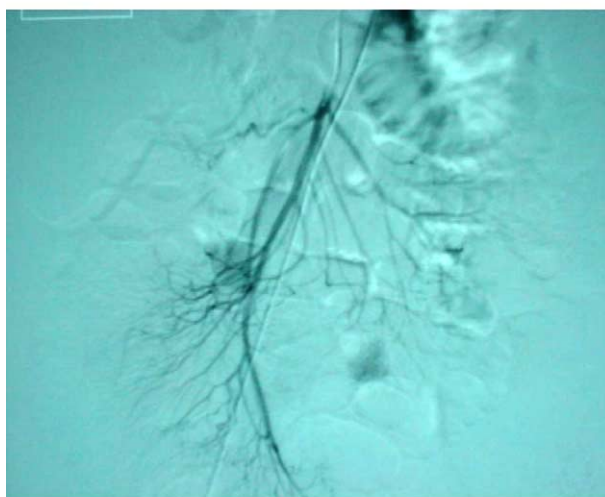
Embolization using gelatin, sponge fragments, polyvinyl alcohol foam particles or spiral metal coils is another treatment option.^{9,10} Post-embolic tissue necrosis may cause pain and fever due to tissue infarction and occasionally results in abscesses formation. Other reported complications include splenic infarction, contrast nephrotoxicity and



Figure 2 Post contrast CT image showing intense enhancement of the lesion, in keeping with a pseudoaneurysm.



(a)



(b)

Figure 3 (a) Selective coeliac axis angiogram showing no abnormal area of contrast pooling. (b) Mesenteric angiogram showing no evidence of an aneurysm in the peripancreatic region.



Figure 4 Post contrast CT image after 3 months showing resolution of the pseudoaneurysm.

recanalization.⁹ Failure may result from difficulty in catheterizing the feeding vessels or from poorly placed embolization material.^{9,10} Dasgupta et al.¹⁰ describe five cases with varying sites of pseudoaneurysm, which were successfully embolized.

Percutaneous injection of bovine thrombin has been proven to be therapeutic in peripheral pseudoaneurysms, commonly in the femoral arteries.^{11,12} A review of relevant case reports on its use for visceral pseudoaneurysms suggested that this was a therapeutic option in situations where the vessel of origin could not be ascertained or cannulated.^{13,14}

Spontaneous resolution has been documented in pseudocysts of the pancreas. About 35–60% have been seen to resolve spontaneously in different studies.^{15–17} A large number of these were seen to measure less than 6 cm. The usual mechanism of resolution was due to decompression into the bowel or pancreatic duct. However, spontaneous resolution of a pancreatic pseudoaneurysm, and of such a large size as in the present patient, is extremely rare. The presumed mechanism of resolution is due to spontaneous decompression via the pancreatic duct and thrombosis of the remnant sac.

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